

Jan. 1892.

Phenomena of Jupiter's Satellites etc.

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Phenomena of Jupiter's Satellites.

Day.	Satellite.	Phenomenon.	Telescope.	Power.	Mean Solar Time of Observation. h m s	Mean Solar Time of N.A. h m s	Observer.
1891 June 16 (a)	III.	Tr. Ing. First contact	Altaz.	100	13 28 50	13 29	W. R.
16	III.	Last seen	"	"	13 38 4		"
July 6	II.	Tr. Egr. First seen	E. Equat.	150	13 43 54		H.
6	II.	Bisection	"	"	13 45 48	13 45	"
6	II.	Last contact	"	"	13 49 33		"
6	I.	Tr. Ing. First contact	"	"	13 44 24		"
6	I.	Bisection	"	"	13 46 58	13 48	"
6	I.	Last seen	"	"	13 49 41		"
13	II.	Tr. Ing. First contact	"	"	13 21 11		A. C.
13	II.	Bisection	"	"	13 22 23	13 21	"
13	II.	Last seen	"	"	13 24 33		"
22 (b)	III.	Tr. Egr. Bisection	Altaz.	100	11 25 4	11 25	H. T.
22	III.	Last contact	"	"	11 27 54		"
22 (c)	II.	Oec. R. First seen	E. Equat.	150	13 18 49		"
22	II.	Bisection	"	"	13 20 49	13 21	"
22	II.	Last contact	"	"	13 22 34		"
29	II.	Ecl. D. Last seen	Altaz.	100	11 4 48	11 5 23	H. F.
Aug. 6	I.	Ecl. D. Last seen	E. Equat.	150	11 52 32	11 52 2	A. M.
14	I.	Tr. Ing. First contact	"	"	11 30 50		C. D.
14	I.	Last seen	"	"	11 34 49	11 33	"

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Day.	Satellite.	Phenomenon.	Telescope.	Power.	Mean Solar Time of Observation. h m s	Mean Solar Time of N.A. h m s	Observer.
1891 Aug. 14	II.	Tr. Ing. First contact	E. Equat.	150	11 56 50	11 58	C. D.
14	II.	Bisection	"	"	11 58 25		"
14	II.	Last seen	"	"	12 2 9		"
15	I.	Occ. R. First seen	"	"	11 2 37		H.
15	I.	Bisection	"	"	11 4 14	11 4	"
15	I.	Last contact	"	"	11 6 24		"
30	II.	Ecl. D. Last seen	"	"	10 43 9	10 42 4	L.
30 (d)	I.	Tr. Egr. First seen	"	"	11 37 5		"
30	I.	Last contact	"	"	11 43 29	11 44	"
Sept. 10	III.	Tr. Ing. First contact	Altaz.	100	7 29 34	7 31	T.
10	III.	Last seen	"	"	7 36 18		"
10	III.	Tr. Egr. Bisection	E. Equat.	220	10 47 28	10 51	II.
10	III.	Last contact	"	"	10 53 2		"
15 (e)	I.	Tr. Ing. First contact	Altaz.	100	7 17 31	7 18	L.
15	I.	Tr. Egr. First seen	"	"	9 32 59	9 36	"
15	I.	Last contact	"	"	9 37 33		"
15	II.	Tr. Ing. First contact	"	"	10 5 44		"
15	II.	Bisection	"	"	10 8 33		"
15	II.	Last seen	"	"	10 12 3		"
15	II.	First contact	E. Equat.	220	10 9 58	10 13	A. C.
15	II.	Bisection	"	"	10 11 44		"
15	II.	Last seen	"	"	10 13 31		"

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Day.	Satellite.	Phenomenon.	Telescope.	Power.	Mean Solar Time of Observation. h m s	Mean Solar Time of N.A. h m s	Observer.
1891 Sept. 22	I.	Tr. Ing. First contact	Altaz.	100	8 58 34		H.
22	I.	Bisection	"	"	9 0 13	9 2	"
22	I.	Last seen	"	"	9 2 53		"
22	I.	Tr. Egr. First seen	E. Equat.	220	11 16 12		T.
22	I.	Last contact	"	"	11 19 27		"
22	I.	First seen	Altaz.	100	11 16 46	11 20	H.
22	I.	Bisection	"	"	11 19 21		"
22	I.	Last contact	"	"	11 22 30		"
23	I.	Tr. R. First seen	"	"	9 3 51		L.
23	I.	First seen	E. Equat.	220	9 3 21	9 2 37	A. C.
23 (f)	I.	Full brightness	"	"	9 4 41		"
28	IV.	Ecl. D. Last seen	"	150	7 59 36	8 6 53	H.
28	III.	Ecl. R. First seen	"	"	9 17 24	9 20 7	"
28	III.	Full brightness	"	"	9 18 45		"
28 (g)	IV.	Ecl. R. First seen	"	"	11 45 56	11 48 19	"
28	IV.	Full brightness	"	"	11 55 0		"
28	I.	Occ. D. First contact	Altaz.	100	13 33 52	13 38	C. M.
28	I.	Last seen	"	"	13 36 26		"
28	I.	Ecl. R. First seen	E. Equat.	150	7 22 24	7 22 12	A. C.
9	I.	Full brightness	"	"	7 24 29		"

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Day.		Satellite.	Phenomenon.	Telescope.	Power.	Mean Solar Time of Observation.		Mean Solar Time of N.A.		Observer.
						h	m	h	m	
1891 Oct. 12		III.	Occ. D. First contact	E. Equat.	220	10	26 47			H.
12		III.	Bisection	"	"	10	30 2			"
12		III.	Last seen	"	"	10	34 11			"
12		III.	First contact	Altaz.	100	10	27 45	10	30	H. F.
12		III.	Bisection	"	"	10	29 40			"
12		III.	Last seen	"	"	10	32 4			"
14 (h)		I.	Occ. D. Last seen	"	"	11	37 59	11	38	H.
15 (k)		IV.	Ecl. R. First seen	"	"	5	59 13	5	58 52	A. C.
15		IV.	Full brightness	"	"	6	4 43			"
15		I.	Tr. Ing. First contact	E. Equat.	55	8	45 57			"
15		I.	Bisection	"	"	8	46 52	8	46	"
15		I.	Last seen	"	"	8	49 9			"
15		I.	Tr. Egr. First seen	"	"	11	4 35			"
15		I.	Bisection	"	"	11	5 42	11	4	"
15		I.	Last contact	"	"	11	7 46			"
16 (l)		I.	Ecl. R. First seen	"	"	9	17 51	9	17 43	L.
16		I.	Full brightness	"	"	9	21 18			"
17		II.	Tr. Ing. First contact	"	220	8	36 58	8	39	T.
17		II.	Last seen	"	"	8	41 27			"
17		II.	Tr. Egr. First seen	"	"	11	29 56	11	32	"
17		II.	Last contact	"	"	11	34 10			"
23 (m)		IV.	Tr. Egr. Last contact	"	55	7	9 2	7	7	C. D.

Day.	Satellite.	Phenomenon.	Telescope.	Power.	Mean Solar Time of Observation. h m s	Mean Solar Time of N.A. h m s	Observer.
1891 Oct. 23	I.	Occ. D. First contact	E. Equat.	220	7 51 1		C. D.
23	I.	Bisection	"	"	7 52 27	7 53	"
23	I.	Last seen	"	"	7 54 15		"
Nov. 2 (n)	II.	Occ. D. First contact	"	220	7 30 11		L.
2	II.	Bisection	"	"	7 34 17	7 39	"
2	II.	Last seen	"	"	7 39 9		"
7	I.	Tr. Ing. First contact	"	"	8 39 23		H.
7	I.	Bisection	"	"	8 42 8	8 42	"
7	I.	Last seen	"	"	8 45 57		"
7	I.	Tr. Egr. First seen	"	"	10 58 25		"
7	I.	Bisection	"	"	11 0 35	11 1	"
7	I.	Last contact	"	"	11 3 0		"
8	I.	Occ. D. First contact	"	"	5 58 47		A. C.
8	I.	Bisection	"	"	6 0 11	6 2	"
8	I.	Last seen	"	"	6 2 8		"
11	II.	Tr. Egr. First seen	"	"	8 5 24	8 8	H.
11	II.	Bisection	"	"	8 8 9		"
Dec. 2	I.	Tr. Egr. Last contact	"	"	5 42 40		L.
2	I.	First seen	Altaz.	100	5 37 58	5 39	A. C.
2	I.	Last contact	"	"	5 43 55		"
4	II.	Occ. D. First contact	E. Equat.	150	7 2 44		"
4	II.	Bisection	"	"	7 3 54	7 7	"
4	II.	Last seen	"	"	7 6 56		"

Day.	Satellite.	Phenomenon.	Telescope.	ver.	Mean Solar Time of Observation. h m s	Mean Solar Time of N.A. h m s	Observer.
1891 Dec. 5 (o)	III.	Tr. Egr. First seen	E. Equat.	220	6 18 2		H.
5	III.	Bisection	"	"	6 20 47		"
5	III.	Last contact	"	"	6 25 46	6 21	"
5 (p)	III.	Bisection	Photo. Equat.	225	6 19 38		C. D.
5	III.	Last contact	"	"	6 21 58		"
9	I.	Tr. Ing. First contact	E. Equat.	150	5 15 22	5 17	H.
9	I.	Last seen	"	"	5 19 47		"
17	I.	Ecl. R. First seen	Altaz.	100	8 9 59	8 9 26	H.
17	I.	Full brightness	"	"	8 11 54		"

Notes.

(a) Satellite very faint. (b) The phenomenon occurred so much earlier than was expected that the first contact was lost. *Jupiter* was examined at about 11^h 18^m, and a point of light was suspected at the place where III. was ultimately seen, but the appearance was intermittent, and very like scintillations at other points of the limb. The attention of the observer was then called away till 11^h 25^m. (c) Cloudy at times, but quite clear at first and last contacts. (d) A good observation. Limb very steady and well defined. (e) A rough observation; *Jupiter* clouded. Last contact not seen; cloudy. (f) Rather uncertain. (g) The satellite reappeared almost coincident with III.; the time may be late on this account. (h) *Jupiter* in light cloud; satellite hardly visible; observation not considered good. (i) Near I.; the time may be late on this account. (j) A very good observation. (m) Satellite very faint indeed; observation not worth much. (n) Observation not good; cloudy. The bisection probably the best observation, as *Jupiter* was bright for some 30^s about that time. (o) Not a good observation; windy; definition bad. (p) Very unsteady; windy.

The aperture of the object glass of the East Equatoreal is 6·7 inches, of the Corbett 6·5 inches, and of the Altaz. 3½ inches. The abbreviation "Photo. Equat." denotes the guiding telescope of the Photographic Equatoreal, aperture 10 inches. The initials H. T., T., L., H., A. C., J. P., W. R., H. F., A. M., C. M., C. D., are those of Mr. Turner, Mr. Thackeray, Mr. Lewis, Mr. Hollis, Mr. Crommelin, Mr. Power, Mr. Russell, Mr. Furner, Mr. Miskin, Mr. Martin, and Mr. Davidson respectively.

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Ephemeris of Juno, 1891.

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Ephemeris of Juno near the time of Opposition, 1891; computed from the Corrected Elements published in "Monthly Notices," vol. l., p. 495.

(Communicated by the Superintendent of the "Nautical Almanac.")

At Transit at Greenwich.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Month and Day.	Apparent Right Ascension.	Apparent Declination.
	h m s	S. ° ' "		h m s	S. ° ' "
July 23	21 55 18.5	S. 1 10 23.9	Aug. 22	21 33 31.06	S. 4 50 15.5
24	21 54 31.26	1 14 46.5	23	21 32 42.66	4 59 59.7
25	21 53 59.44	1 19 22.7	24	21 31 54.54	5 9 48.8
26	21 53 26.43	1 24 12.5	25	21 31 6.76	5 19 42.3
27	21 52 52.25	1 29 15.8	26	21 30 19.40	5 29 39.8
28	21 52 16.94	1 34 32.7	27	21 29 32.51	5 39 40.7
29	21 51 40.51	1 40 3.0	28	21 28 46.16	5 49 44.6
30	21 51 2.99	1 45 46.6	29	21 28 0.41	5 59 50.8
31	21 50 24.43	1 51 43.6	30	21 27 15.32	6 9 58.9
Aug. 1	21 49 44.86	1 57 53.7	31	21 26 30.97	6 20 8.2
2	21 49 4.34	2 4 16.7	Sept. 1	21 25 47.41	6 30 18.2
3	21 48 22.91	2 10 52.5	2	21 25 4.70	6 40 28.5
4	21 47 40.59	2 17 41.0	3	21 24 22.90	6 50 38.6
5	21 46 57.45	2 24 41.9	4	21 23 42.10	7 0 47.7
6	21 46 13.54	2 31 54.7	5	21 23 2.31	7 10 55.5
7	21 45 28.90	2 39 19.5	6	21 22 23.60	7 21 1.3
8	21 44 43.59	2 46 55.8	7	21 21 46.03	7 31 4.8
9	21 43 57.66	2 54 43.3	8	21 21 9.66	7 41 5.5
10	21 43 11.18	3 2 41.8	9	21 20 34.51	7 51 2.9
11	21 42 24.19	3 10 50.9	10	21 20 0.65	8 0 56.5
12	21 41 36.76	3 19 10.2	11	21 19 28.11	8 10 45.8
13	21 40 48.94	3 27 39.3	12	21 18 56.94	8 20 30.5
14	21 40 0.79	3 36 17.9	13	21 18 27.17	8 30 10.2
15	21 39 12.37	3 45 5.4	14	21 17 58.83	8 39 44.3
16	21 38 23.75	3 54 1.6	15	21 17 31.97	8 49 12.6
17	21 37 34.99	4 3 6.1	16	21 17 6.62	8 58 34.8
18	21 36 46.15	4 12 18.3	17	21 16 42.80	9 7 50.5
19	21 35 57.26	4 21 37.8	18	21 16 20.53	9 16 59.4
20	21 35 8.42	4 31 4.2	19	21 15 59.85	9 26 1.1
21	21 34 19.66	S. 4 40 36.9	20	21 15 40.76	S. 9 34 55.4